

## **REMARKS**

**[0001]** Applicant's attorney respectfully requests reconsideration and allowance of all of the claims of the application. Claims 1-10 and 25-35 are presently pending. Claims 1, 10, 27 and 31 are amended herein.

### **Formal Request for an Interview**

**[0002]** If the Examiner's reply to this communication is anything other than allowance of all pending claims, then I formally request an interview with the Examiner. I encourage the Examiner to call me—the undersigned representative for the Applicant—so that we can talk about this matter so as to resolve any outstanding issues quickly and efficiently over the phone.

**[0003]** Please contact me to schedule a date and time for a telephone interview that is most convenient for both of us. While email works great for me, I welcome your call as well. My contact information may be found on the last page of this response.

### **Allowable Subject Matter**

**[0004]** Applicant's attorney would like to thank the Examiner for allowing claims 1-9. These claims have not been amended and, therefore, remain allowable. Additionally, Applicant's attorney would like to thank the Examiner for indicating allowability for claims 27 and 28. Claim 27 has been amended to include the recitations of claims 25 and 26 as suggested by the Examiner.

## **Substantive Matters**

### **Claim Rejections under § 101**

**[0005]** Claims 10 and 31 are rejected under 35 U.S.C. § 101. Applicant's attorney respectfully traverses this rejection. Furthermore, in light of the amendments presented herein, Applicant's attorney respectfully submits that these claims comply with the patentability requirements of §101 and that the §101 rejections should be withdrawn. Applicant's attorney further asserts that these claims are allowable. Accordingly, Applicant's attorney asks the Examiner to withdraw these rejections.

**[0006]** If the Examiner maintains the rejection of these claims, then Applicant's attorney requests additional guidance as to what is necessary to overcome the rejection.

### **Claim Rejections under § 103**

**[0007]** The Examiner rejects claims 10, 25 – 26 and 29 - 35 under § 103. For the reasons set forth below, the Examiner has not made a *prima facie* case showing that the rejected claims are obvious.

**[0008]** Accordingly, Applicant's attorney respectfully requests that the § 103 rejections be withdrawn and the case be passed along to issuance.

**[0009]** The Examiner's rejections are based upon the following references alone and/or in combination:

- **US Patent No. 6,317,476 to Oishi, et al:** "*Oishi et al*" hereinafter, (issued November 13, 2001); and

- **US Patent Publication No. 2002/0180539 to Keaveney, et al:**  
“*Keaveney et al*” hereinafter, (published December 5, 2002).

## **Obviousness Rejections**

### **Lack of *Prima Facie* Case of Obviousness (MPEP § 2142)**

**[0010]** Applicant disagrees with the Examiner's obviousness rejections. Arguments presented herein point to various aspects of the record to demonstrate that all of the criteria set forth for making a *prima facie* case have not been met. To establish *prima facie* obviousness of a claimed invention, all of the claim recitations must be taught or suggested by the prior art<sup>1</sup> and "all words in a claim must be considered in judging the patentability of that claim against the prior art."<sup>2</sup> Further, if prior art, in any material respect teaches away from the claimed invention, the art cannot be used to support an obviousness rejection.<sup>3</sup> Moreover, if a modification would render a reference unsatisfactory for its intended purpose, the suggested modification / combination is impermissible.<sup>4</sup>

### **Based upon *Oishi, et al* and *Keaveney, et al***

**[0011]** The Examiner rejects claims 10, 25-26 and 29-35 under 35 U.S.C. § 103(a) as being unpatentable over *Oishi, et al* and *Keaveney, et al*. Applicant's attorney respectfully traverses the rejection of these claims and asks the Examiner to withdraw the rejection of these claims.

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<sup>1</sup> *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)

<sup>2</sup> *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970)

<sup>3</sup> *In re Geisler*, 116 F.3d 1465, 1471, 43 USPQ2d 1362, 1366 (Fed Cir. 1997)

<sup>4</sup> See MPEP § 2143.01

Independent Claim 10

**[0012]** Applicant's attorney submits that the combination of *Oishi et al* and *Keaveney et al* does not teach or suggest all of the elements as recited in this claim. In specific, claim 10 recites

**[0013]** For example, referring, e.g., to FIGS. 1a and 2 of the present application, a phase-locked loop (PLL) 100 includes means 110 for generating a modulation value  $x[n]$ . The PLL 100 (through control logic 125) estimates the phase error (represented by the correction value  $N_c$ ) by calculating an incremental value corresponding to an incremental phase error. This incremental value is calculated from the conversion factor (i.e., the adjusting value  $K$  and its modulus  $M$ ) and the modulation value  $x[n]$ . The correction value  $N_c$  is then converted (through DAC 130) into the correction current  $I_c$  for conditioning the charge-pump current  $I_p$ . It should be noted that the incremental value is calculated according to the modulation value  $x[n]$ , and the dividing ratio of the multi-modulus divider 105 is modulated by the modulator 110.

**[0014]** As has been pointed out previously, *Oishi et al* does not teach means for generating a modulation value, a dividing ratio being modulated according to the modulation value, and means for calculating an incremental value according to the conversion factor and the modulation value. Instead, FIG. 2 of *Oishi et al* simply teaches the same type of PLL that is discussed in the Background section of the present application. The Examiner correctly acknowledges that *Oishi et al* fails to teach a PLL that utilizes a modulator.

**[0015]** *Keaveney et al*, however, does not even come close to remedying the deficient teaching of *Oishi et al*. In specific, the Office Action merely points out that *Keaveney et al* is aware of the broad concept of modulation when referencing paragraph [0005]. This particular paragraph teaches (in the background of this application) that an interpolator may be a higher order sigma delta modulator. There is no further teaching or disclosure of how such an interpolator may be used to modify a feedback signal, modulate a detected frequency error or generally and teaching whatsoever other than that fact that sigma-delta modulators do, in fact, exist. The Examiner has failed to provide any reference to *Keaveney et al* that leads to some teaching suggestion or motivation as to why one skilled in the art would use such a sigma-delta modulator in any manner, let alone the very specific manner that is recited in claim 10. The Examiner seems to agree in that claim 1 is indicated to be allowable.

**[0016]** As shown above, no permissible combination of *Oishi et al* and *Keaveney et al* teaches or suggests all of the elements and features of this claim. Accordingly, Applicant's attorney asks the Examiner to withdraw the rejection of this claim.

#### Independent Claim 25

**[0017]** Applicant's attorney submits that the combination of *Oishi et al* and *Keaveney et al* does not teach or suggest all of the elements as recited in this claim. In specific, claim 25 recites a control circuit coupled to the phase-frequency detector and operable to generate a conditioning signal based on a modulation value and the feedback signal. For example, referring, e.g., to FIGS.

1a and 2 of the present application, a phase-locked loop (PLL) 100 includes a circuit 110 for generating a modulation value  $x[n]$  and a direct feedback signal  $V_b$  used to generate a error based upon a comparison to a reference signal. The PLL 100 (through control logic 125) estimates the phase error (represented by the correction value  $N_c$ ) by calculating an incremental value corresponding to an incremental phase error. This incremental value is calculated from the conversion factor (*i.e.*, the adjusting value  $K$  and its modulus  $M$ ) and the modulation value  $x[n]$ . The correction value  $N_c$  is then converted (through DAC 130) into the correction current  $I_c$  for conditioning the charge-pump current  $I_p$ . Thus, the correction current  $I_c$  is generated based upon a modulation value  $x[n]$  and a feedback signal  $V_b$

**[0018]** Neither *Oishi et al* nor *Keaveney et al* teach a conditioning signal based on a modulation value and the feedback signal. Notwithstanding the fact that the Office Action correctly acknowledges that *Oishi* does not teach any modulation value whatsoever, even  $I_{ss}$  as produced from the spurious signal suppression circuit (17) is not based upon any feedback signal as well. With reference to column 9, lines 26-56, the control signal sent to the spurious signal suppression circuit (17) is merely based upon an accumulator value ( $acm$ ) that is an updated count of the sum of input data ( $F$ ) and the number of cycles “accumulated” so far. That is, the  $acm$  signal which triggers the flip-flop (*i.e.*, spurious signal suppression circuit) is not based upon any feedback signal.

**[0019]** Certainly, *Keaveney et al* does not remedy this deficient teaching as there is no conditioning signal anywhere in *Keaveney et al* that affects the detected phase error signal (signal generated by phase detector (14)). Simply

put, there is no disclosure in any prior art of record that may be construed to teach a conditioning signal based on a modulation value and the feedback signal.

**[0020]** Even if one were to accept that these citation to *Oishi et al* and *Keaveney et al* do teach these recitations (which Applicant's attorney specifically asserts that they do not), there is still no sufficient reason as to why a skilled artisan would combine these teachings. In *Oishi et al*, the purpose of the spurious signal suppression circuit is to suppress spurious signals that may accumulate as a result of frequency division. It does not make sense for a skilled artisan to then also modulate this suppression signal. One would not modulate the very means by which undesired signals are suppressed. Thus, one would not look to combine the teachings of these references in this manner. Therefore such a combination of these references is impermissible.

**[0021]** Moreover, Applicant's attorney submits that the Examiner is using hindsight reasoning. As a matter of law, obviousness may not be established using hindsight obtained in view of the teachings or suggestions of the applicants.<sup>1</sup> To guard against the use of such impermissible hindsight, obviousness needs to be determined by ascertaining whether the applicable prior art contains any suggestion or motivation for making the modifications in the design of the prior art article in order to produce the claimed design. The mere possibility that a prior art teaching could be modified or combined such that its use would lead to the particular limitations recited in a claim does not make the

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<sup>1</sup> *W.L. Gore & Assocs., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1551, 1553, 220 USPQ 303, 311, 312-13 (Fed. Cir. 1983),

cert. denied, 469 U.S. 851 (1984).



recited limitation obvious, unless the prior art suggests the desirability of such a modification.<sup>1</sup>

**[0022]** As shown above, the combination of *Oishi et al* and *Keaveney et al* does not teach or suggest all of the elements and features of this claim. Accordingly, Applicant's attorney asks the Examiner to withdraw the rejection of this claim.

*Dependent Claims 26 and 29-30*

**[0023]** These claims ultimately depend upon independent claim 25. As discussed above, claim 25 is allowable. It is axiomatic that any dependent claim which depends from an allowable base claim is also allowable. Additionally, some or all of these claims may also be allowable for additional independent reasons.

*Independent Claims 31 and 35*

**[0024]** Applicant's attorney submits that the combination of *Oishi et al* and *Keaveney et al* does not teach or suggest all of the elements as recited in these claims. Applicant's attorney submits that these claims are allowable for at least similar reasons as discussed above with respect to claims 10 and 25. As shown above, the combination of *Oishi et al* and *Keaveney et al* does not teach or

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<sup>1</sup> See *In re Gordon*, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984).

suggest all of the elements and features of this claim. Accordingly, Applicant's attorney asks the Examiner to withdraw the rejection of these claims.

*Dependent Claims 32-34*

**[0025]** These claims ultimately depend upon independent claim 31. As discussed above, claim 31 is allowable. It is axiomatic that any dependent claim which depends from an allowable base claim is also allowable. Additionally, some or all of these claims may also be allowable for additional independent reasons.

## **Conclusion**

**[0026]** All pending claims are in condition for allowance. Applicant's attorney respectfully requests reconsideration and prompt issuance of the application. If any issues remain that prevent issuance of this application, the **Examiner is urged to contact me before issuing a subsequent Action.**

Please call or email me at your convenience.

**[0027]** Any additional fees required as a result of this amendment have been paid from the below-referenced deposit account as filed herewith. Should further payment be required to cover such fees you are hereby authorized to charge such payment to Deposit Account No. 07-1897.

Respectfully Submitted,

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